

80. Birnboim et al., Nucleic Acids Research 7, 1513
(1979).

81. Maxam and Gilbert, Proc. Nat. Acad. Sci. 74, 560
(1977).

82. McGrath and Levinson, Nature 295, 423 (1982).

5 83. Itakura et al., Science 198, 1056 (1977).

84. Crea et al., Proc. Natl. Acad. Sci. 75, 5765
(1978).--

IN THE CLAIMS:

Please cancel claims 1, 6, 9-17, and 24-25, without prejudice.

Please amend the remaining claims as follows:

✓ 2. (Amended) A process for obtaining a mature protein heterologous to yeast as a product of yeast expression, which process comprises:

(a) transforming a yeast organism with an expression vehicle comprising [the] a DNA sequence encoding [substantially the] an Arg C-terminal pre-pro peptide of yeast alpha factor operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism;

(b) culturing the transformed organism; and

(c) recovering the mature protein from the culture.

✓ 3. (Amended) A process for obtaining a mature protein heterologous to yeast as a product of yeast expression, processing and secretion, which process comprises:

(a) transforming a yeast organism with an expression vehicle comprising [the DNA sequence of the promoter] yeast alpha factor promoter DNA sequence operably linked to [substantially the] an Arg C-terminal pre-pro peptide sequence of [the] yeast alpha factor

[gene] which is operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism;

(b) culturing the transformed yeast organism; and
(c) recovering the mature protein from its supporting medium.

4. (Amended) A process for secreting a mature protein heterologous to yeast into the supporting medium, which process comprises:

(a) transforming a yeast organism with an expression vehicle comprising [the] a DNA sequence encoding [substantially the] an Arg C-terminal pre-pro peptide of yeast alpha factor, operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism; and
(b) culturing the transformed organism.

5. (Amended) The process of Claim 4 wherein said DNA sequences are sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor is under the control of alpha factor promoter.

7. (Amended) [The] An expression vehicle [of Claim 6 which also includes the] comprising yeast alpha factor promoter DNA sequence operably connected to a DNA sequence encoding a mature protein heterologous to the yeast organism, and also comprising a DNA sequence encoding [substantially the] an Arg C-terminal pre-pro peptide of yeast alpha factor operably linked in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats upstream to the DNA sequence encoding [a] the mature protein heterologous to the yeast organism, wherein the protein is in discrete form unaccompanied by any substantial peptide

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presequence or other artifact of expression, as a product of yeast expression, processing and secretion.

s. (Amended) A yeast expression vehicle comprising [the] a DNA sequence encoding [substantially the] an Arg C-terminal pre-pro peptide of yeast alpha factor [gene] operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism, wherein the protein is in discrete form unaccompanied by any substantial peptide presequence or other artifact of expression, as a product of yeast expression, processing and secretion.

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18. (Amended) The expression vehicle of Claim 7 wherein the DNA sequence encoding [heterologous] the mature protein heterologous to the yeast organism encodes [for a protein selected from the group consisting of] human interferon [, bovine interferon, tissue plasminogen activator, and rennin].

19. (Amended) The expression vehicle of Claim 8 wherein the DNA sequence encoding [heterologous] the mature protein heterologous to the yeast organism encodes [for a protein selected from the group consisting of] human interferon [, bovine interferon, tissue plasminogen activator, and rennin].

In claim 22, line 1, change "transformed with" to
--comprising--.

In claim 23, line 1, change "transformed with" to
--comprising--.

Please add new claims as follows:

--26. The expression vehicle of Claim 7 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes bovine interferon.--

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--27. The expression vehicle of Claim 7 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes tissue plasminogen activator.--

--28. The expression vehicle of Claim 7 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes rennin.--

--29. The expression vehicle of Claim 8 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes bovine interferon.--

--30. The expression vehicle of Claim 8 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes tissue plasminogen activator.--

--31. The expression vehicle of Claim 8 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes rennin.--

--32. A DNA molecule comprising a DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism.--

--33. The DNA molecule of claim 32 wherein the DNA sequences are under the control of alpha factor promoter.--

--34. The DNA molecule of claim 32 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes insulin-like growth factor.--

--35. The DNA molecule of claim 32 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes human interferon.--

--36. The DNA molecule of claim 32 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes bovine interferon.--

--37. The DNA molecule of claim 32 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes tissue plasminogen activator.--

--38. The DNA molecule of claim 32 wherein the DNA sequence encoding the mature protein heterologous to the yeast organism encodes rennin.--

--39. The process of claim 2 wherein the DNA encoding all of the Gly (or Asp)-Ala dipeptide repeats has been deleted from the pre-pro peptide of the yeast alpha factor DNA--.

--40. A process for obtaining a mature protein heterologous to yeast as a product of yeast expression, which process comprises:

(a) culturing a yeast organism comprising an expression vehicle comprising a DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism; and

(b) recovering the mature protein from the culture.--

--41. A process for obtaining a mature protein heterologous to yeast as a product of yeast expression, processing and secretion, which process comprises:

(a) culturing a yeast organism comprising an expression vehicle comprising yeast alpha factor promoter DNA sequence operably linked to an Arg C-terminal pre-pro peptide sequence of yeast alpha factor which is operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism; and

(b) recovering the mature protein from its supporting medium.--

--42. A process for secreting a mature protein heterologous to yeast into the supporting medium, which process comprises culturing a yeast organism comprising an expression vehicle comprising a DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor, operably connected in translation reading frame without intervening Glu (or Asp)-Ala dipeptide repeats to a DNA sequence encoding a mature protein heterologous to the yeast organism.--

--43. The process of claim 40 wherein said DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor is under the control of alpha factor promoter.--

--44. The process of claim 42 wherein said DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor is under the control of alpha factor promoter.--

--45. The process of claim 2 wherein said DNA sequence encoding an Arg C-terminal pre-pro peptide of yeast alpha factor is under the control of alpha factor promoter.--